

falo, 1°, 43°; Oswego, 1°, 46°; New York City, —3°, 50°. *New Jersey*—Somerville, —11°, 47°; Trenton, 0°, 52°; Princeton, —8°, 49°. *Pennsylvania*—Franklin, —13°, 40°; New Castle, —16°, 47°; Pittsburgh, —11°, 54°; Philadelphia, —3°, 56°. *Delaware*—Dover, 2°, 62°. *Maryland*—Emmitsburg, —10°, 58°; Cumberland, —5°, 52°; Baltimore, 0°, 64°. *District of Columbia*—Washington, —0.5°, 66°. *Virginia*—Wytheville, —6°, 60°; Dover Mines, 8°, 71°; Mt. Solon, —2° 56°. *West Virginia*—Helvetia, —14°, 60°; Wellsburg, —12°, 48°; Morgantown, —5°, 60°. *North Carolina*—Highlands, —1°, 65°; Wilmington, 19°, 78°; Murphy, 0°, 69°. *South Carolina*—Aiken, 15°, 78°; Charleston, 23°, 80°. *Georgia*—Gainesville, 10°, 72°; St. Marys, 24°, 78°; Augusta, 17°, 79°. *Florida*—Daytona, 30°, 76°; Gulf Hammock, 22°, 83°; Jacksonville, 25°, 80°. *Alabama*—Green Springs, 8°, 74°; Mobile, 15°, 73°; Montgomery, 14°, 75°. *Mississippi*—Vicksburg, 12°, 80°; Fayette, 7°, 76°. *Louisiana*—New Orleans, 20°, 78°; Pt. Pleasant, 10°, 77°; Oka-look, 5°, 79°. *Texas*—Gilmer, —1°, 78°; Jacksboro, —2°, 80°; Laredo, 25°, 83°; Austin, 16°, 78°; Galveston, 23°, 71°; Corsicana, 4°, 78°. *Ohio*—Jacksonburg, —25°, 58°; Urbana, —23°, 51°; Columbus, —20°, 56°; Cincinnati, —10°, 64°. *Kentucky*—Danville, —12°, 66°; Bowling Green, —8°, 74°; Louisville, —10°, 66°. *Tennessee*—Clarksville, —10°, 70°; Austin, —6°, 76°; Memphis, 6°, 70°. *Arkansas*—Mt. Ida, —9°, 72°. *Michigan*—Detroit, —15°, 44°; Grand Haven, 0°, 48°; Niles, —18°, 47°; Marquette, —6°, 45°. *Indiana*—Arlington, —25°, 57°; Spiceland, —23°, 56°; Indianapolis, —22°, 57°. *Illinois*—Sterling, —28°, 49°; Peoria, —21°, 46°; Mt. Sterling, —22°, 58°; Cairo, —6°, 64°; Chicago, —18°, 49°. *Missouri*—Ashley, —27°, 60°; Pierce City, —16°, 56°; Corning, —23°, 52°; St. Louis, —14°, 59°. *Kansas*—Topeka, —19°, 62°; Holton, —18°, 54°; Leavenworth, —14°, 56°; Dodge City, —9°, 61°. *Wisconsin*—Neilsville, —30°, 38°; Embarrass, —26°, 45°; Milwaukee, —20°, 46°. *Iowa*—Ames, —30°, 38°; Tabor, —22°, 54°; Dubuque, —22°, 46°; Des Moines, —21°, 52°. *Nebraska*—Genoa, —26°, 70°; Plattsmouth, —24°, 60°; Omaha, —22°, 62°. *Indian Territory*—Ft. Sill, —9°, 70°; Ft. Gibson, —5°, 71°. *Minnesota*—Breckenridge, —32°, 47°; Duluth, —28°, 45°; St. Paul, —26°, 49°. *Dakota*—Pembina, —32°, 36°; Bismarck, —29°, 46°; Yankton, —30°, 62°; Olivet, —29°, 65°. *Colorado*—Pikes Peak, —33°, 30°; Denver, —10°, 61°; Georgetown, 5°, 62°. *New Mexico*—Santa Fe, —2°, 76°; Ft. Union, —4°, 72°. *Wyoming Territory*—Cheyenne, —15°, 60°; Ft. Fred. Steele, —27°, 55°. *Montana*—Virginia City, —16°, 44°. *Utah*—Salt Lake City, 4°, 54°. *Nevada*—Winnemucca, —14°, 55°; Pioche, 5°, 57°. *Idaho*—Boise City, 3°, 53°. *California*—San Francisco, 40°, 62°; Los Angeles, 36°, 74°; Red Bluff, 27°, 63°; Sacramento, 29°, 63°; Visalia, 24°, 63°. *Oregon*—Portland, 20°, 52°.

*Ranges of Temperature.*—The monthly ranges will appear from an examination of the minima and maxima just given. Greatest daily ranges vary in New England from 24° at Newport to 38° at Burlington; Middle States, 25° at Cape May to 39° at Albany; South Atlantic States, 19° at Cape Lookout to 36° at Atlanta; Gulf States, 20° at Key West to 36° at St. Marks; Ohio valley and Tennessee, 27° at Louisville to 38° at Pittsburgh and 33° at Knoxville; Lake region, 27° at Milwaukee to 41° at Sandusky; the Northwest, 23° at Davenport to 56° at Yankton; Rocky Mountain stations, 27° at Virginia City to 44° at Denver and Santa Fe; Western Plateau, 23° at Salt Lake City to 40° at Winnemucca; California, 14° at San Francisco to 32° at San Diego.

*Frost*—has occurred nearly every day over the northern sections of the country; in the interior of the Southern States and Texas, from the 1st to 21st, 24th; along the Gulf coast, 4th to 10th, 12th, 14th and 21st.

*Ice* formed in the Gulf and South Atlantic States and on the Pacific coast as follows: Green Springs, Ala., 3rd, 4th; Mayport, Fla., 4th, misty rain, freezing as it fell, forming fringes of ice along the eaves of buildings a foot in length, branches and twigs of trees covered with a glittering coat of ice, which did not entirely disappear until the morning of the 7th, an extremely unusual occurrence here; Pt. Pleasant, La., 2nd to 7th, 9th, 10th, 19th, 20th; Franklin, N. C., 3rd, skating on pond, ice 3½ to 6 inches thick; Gilmer, Tex., 20th to 22nd; Sacramento, 15th, 16th, 18th to 21st, 30th, 31st; Visalia, Cal., 15th; Stockton, Tex., 5th; Eagle Pass, Tex., 4th, 6th, 9th, 12th, 19th; Decatur, Tex., 6th, battery frozen, 11th, ice on telegraph wire; Indianola, Tex., 6th; New Orleans, La., 5th; St. Marks Fla., 4th to 7th; Mobile, 3rd, 5th, 20th; Jacksonville, 5th.

*Ground Frozen.*—Green Springs, Ala., 20th; Franklin, N. C., 3rd, 12 inches.

## PRECIPITATION.

On chart No. III. is illustrated the general distribution of precipitation for the month. On the left side is a table giving the average precipitation for the month, which shows a large excess over Tennessee; a slight excess in the St. Lawrence Valley, Western Gulf States and California, and elsewhere a general deficiency which is greatest in the East Gulf States and Oregon.

*Special Heavy Rains.*—8th and 9th, Knoxville, Tenn., 3.99 inches; Chattanooga, 3.12 in.; Fayetteville N. C., 6.00 in. 11th and 12th, Dover Mines, Va., 2.50 in.; Chattanooga, 3.31 in.; Gainesville, Ga., 2.77 in.; Murphy, N. C., 3.50 in.; 12th, Weldon, N. C., 2.56 in. 15th, North Lewisburg, Ohio, 4.80 in. 17th, Clarksville, Tenn., 2.40 in. 18th and 19th, Fayetteville, N. C., 2.00 in. 27th and 28th, Margaretta, Ohio, 3.70 in.

*Largest Monthly Rain-falls.*—Fayetteville, N. C., 10.25 inches; Knoxville, 9.59; Baton Rouge Bks., La., 9.00; Murphy, N. C., 8.60; Chattanooga, Tenn., (for 23 days,) 8.48; Fort Canby, Wash. Ty., 8.24; Memphis, 7.71; Pt. Pleasant, La., 7.57; Shreveport, 7.31; Mt. Washington, 7.13; Kittyhawk, 6.88; Corsicana, 6.72; Clarksville, Tenn., 6.47; Cape Hatteras, 6.44; McMinnville, Tenn., 6.42; Austin, Tenn., 6.38; Vicksburg, 6.18.

*Smallest Monthly Rain-falls.*—Burkes, Ariz., trace; Vail, Ia., and Breckenridge, 0.05 inches; Phoenix, Ariz., and Omaha, 0.07 in.; Fredericksburg, Uvalde and Brackettsville, Tex., 0.08 in.; Ft. Lyon, Cal., and Eagle Pass, Tex., 0.10 in.; St. Paul, Minn., 0.11 in.; Castroville, Tex., and Plattsmouth, Neb., 0.12 in.; Ft. Leavenworth, Kan., 0.14 in.; Wickenburg, Ariz., Bismarck, Emerson and De Soto, Neb., 0.15 in.; Tabor, Ia., 0.19 in.; Ft. Garland, Col., 0.18 in.; Genoa, Neb., Ft. Dodge, Ia., and Camp Verde, Ariz., 0.20 in.; Yankton, Dak., 0.23 in.; Pilot Point, Tex., 0.24 in.; Olivet, Dak., 0.25 in.; Coucho, Tex., 0.26 in.; Cheyenne, 0.32 in.

*Floods.*—The only floods reported were occasioned by ice gorges, and are noticed under the head of navigation.

*Hail.*—Denison, Tex., 8th; St. Meinrad, Ind., 15th; Springfield, Mass., 9th; Plattsmouth, Neb., 27th; Princeton, N. J., 8th, 17th, 23rd; Troy, N. Y., 27th; Pikes Peak, 30th; Breckenridge, Minn., 24th; San Antonio, Tex., 26th.

*Rainy Days.*—The number of days on which rain or snow has fallen varies, as follows: New England, 7 to 20; Middle States, 7 to 19; South Atlantic States, 5 to 12; Gulf States, 6 to 17; Ohio valley and Tennessee, 14 to 20; Lower Lake region, 10 to 22; Upper Lake region, 8 to 18; Upper Mississippi valley, 4 to 9; Lower Missouri valley, 4 to 7; Eastern slope, 3 to 14; Rocky Mountains, 4 to 10; Western Plateau, 11 to 15; Pacific coast, 8 to 14.

*Cloudy Days.*—For New England, the number varies from 8 to 20; Middle States, 6th to 18th; South Atlantic States 5 to 20; Gulf States, 4 to 21; Ohio valley and Tennessee, 7th to 17th; Lower Lake region, 14 to 25; Upper Lake region, 7 to 21; Upper Mississippi valley, 3 to 12; Lower Missouri valley, 3 to 12; Eastern slope, 5 to 18; Rocky Mountains, 2 to 10; *Western Plateaus*, 6 to 15; Pacific coast, 5 to 10.

*Snow.*—The precipitation northeast, north and west of the Ohio valley, occurred generally as snow. On the Pacific coast, and in the Gulf and South Atlantic States it occurred, as follows: In *British Columbia* on the 5th and 8th. *Oregon*, 15th. *California*, on the coast mountains, 28th, and Sacramento, 13th. *Texas*, 4th, 5th, 6th, 8th to 11th. *Louisiana*, 3rd, 4th, 5th. *Mississippi*, 4th, 5th, 9th. *Alabama*, 4th, 5th. *Georgia*, 4th, 5th. *North Carolina*, 8th, 19th.

*Snow from a cloudless Sky.*—Newbury, Vt., 16th, (6.30 p. m.) sky was perfectly clear and yet for about twenty minutes there was a continuous fall of snow, the flakes were large, but very thin and transparent, sky was sufficiently clear that the zodiacal light shone with considerable brilliancy; Burlington, Vt., 14th, snow fell with sky so clear that stars were plainly visible.

*Depth of snow on Ground at end of Month.*—It varied in depth in the different sections as follows: *New England*, from trace in Connecticut to 36 inches in Maine and on Mt. Washington. *Middle States*, 0 to 3 inches along the coast, to 27 inches in the interior. *Ohio*, 0 to 16 inches. *Lower Lakes*, 0 to 30 inches. *Upper Lakes*, 0 to 18 inches. *Upper Mississippi valley*, 0 to 1 inch. *Illinois*, 3 to 12 inches. *Red river of the North valley*,  $\frac{1}{2}$  to 5 inches. *Missouri*, 4 to 5 inches. *Dakota*, 0 to 1 inch, and snow drifts. *Rocky Mountains*, 0 at Santa Fe to 10 inches at Virginia City. *Western Plateaus*, trace at Winnemucca to 7 inches at Pioche and 4 inches at Salt Lake City.

## RELATIVE HUMIDITY.

The average percentage of relative humidity for the month ranges as follows: New England, 59 to 76; Middle Atlantic States, 63 to 80; South Atlantic States, 65 to 81; East Gulf States, 41 to 80; West Gulf States, 73 to 85; Lower Lakes, 73 to 82; Upper Lakes, 71 to 77; Ohio valley and Tennessee, 62 to 77; Upper Mississippi valley, 69 to 79; Lower Missouri valley, 62 to 76; Red River of the North valley, 85 to 88; Eastern Slope, 61 to 82; Western Plateau, 60 to 73; California, 64 to 73. *High stations* report the following, not corrected for altitude: Mt. Washington, 85; Pike's Peak, 40; Cheyenne, 61; Virginia City, 63; Denver, 52; Santa Fe, 55.

## WINDS.

The prevailing winds at the Signal Service stations are shown by arrows on chart No. II, from an examination of which it will be seen that the prevailing winds of the month were very generally from north to west, except along the Gulf coast and in central Texas, where they were southerly.

*Total Movements of the Air.*—The following are the *largest* monthly movements recorded at the Signal Service stations, viz: Pike's Peak, 18,496 miles; Cape May, 15,376; Sandy Hook, 13,982; Thatcher's Island, 13,704; Wood's Holl, 13,216; Cape Lookout, 13,136; Kittyhawk, 12,131; Barnegat, 10,860; Sandusky, 9,834; Milwaukee, 9,826; Indianola, 9,733; Eastport, 9,521. The *smallest* are: Visalia, Cal., 1,963 miles; Fredericksburg, Tex., 2,208; Uvalde, Tex., 2,589; Dubuque, Iowa, 2,600; Nashville, 2,763; Shreveport, 2,894; Lynchburg, 3,122; Virginia City, Mont., 3,165; Fort Davis, Tex., 3,330; Boise City, Idaho, 3,442; San Antonio, Tex., 3,471; Indianola, 3,570; Augusta, Ga., 3,594.

## VERIFICATIONS.

*Indications.*—The detailed comparison of the tri-daily weather Indications with the telegraphic reports for the succeeding twenty-four hours, show the general percentage of omissions to be 0.6 per cent., and of verifications to be 86.2 per cent. The percentage of verifications for the four elements have been: weather, 90.9; wind, 83.2; temperature, 86.2; barometer, 84.6. The percentage of verifications by geographical districts have been: New England, 85.5; Middle States, 86.0; South Atlantic States, 88.6; East Gulf